the obtaining of the average value comprises obtaining the average value of the peak-to-peak values to detect the amplitude of the envelope signal.

19. (ONCE AMENDED) The optical disc discrimination method of claim 12, further comprising:

controlling a rotation of the loaded disc at a speed slow enough to maintain a focusing state with respect to each of the CD, DVD-ROM and DVD-RAM in the off-track state.

REMARKS

INTRODUCTION:

In accordance with the foregoing, claims 4, 5, 13, and 21 have been canceled without prejudice or disclaimer, and claims 1, 6, 8, 11, 12, 14, 15, 16, and 19 have been amended. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1-3, 6-12, 14-20, and 22-28 are pending and under consideration. Reconsideration is requested.

ENTRY OF AMENDMENT UNDER 37 C.F.R. § 1.116:

Applicant requests entry of this Rule 116 Response because the amendments of claims 1, 6, 8, 11, 12, 14, 15, 16, 19 and 15 should not entail any further search by the Examiner since no new features are being added or no new issues are being raised; and the amendments do not significantly alter the scope of the claims and place the application at least into a better form for purposes of appeal. No new features or new issues are being raised.

The Manual of Patent Examining Procedures sets forth in Section 714.12 that "any amendment that would place the case either in condition for allowance or in better form for appeal may be entered." Moreover, Section 714.13 sets forth that "the Proposed Amendment should be given sufficient consideration to determine whether the claims are in condition for allowance and/or whether the issues on appeal are simplified." The Manual of Patent Examining Procedures further articulates that the reason for any non-entry should be explained expressly in the Advisory Action.

REJECTION UNDER 35 U.S.C. § 102:

In the Office Action, at page 5, claims 1-28 were rejected under 35 U.S.C. § 102 in view of U.S. Patent No. 6,298,024 to Nomura ("Nomura"). This rejection is traversed and reconsideration is requested.

Amended independent claim 1 includes claimed features previously presented in independent claims 14 and 15. Independent claim 1 recites, "an envelope amplitude detector detecting the amplitude of the envelope signal and sampling the envelope signal between a maximum value and a minimum value into n sample signals at a zero cross interval, and obtaining an average value of the obtained n peak-to-peak values as the detected amplitude." The Office Action indicates that column 1, lines 47-60, describe such claimed features. However, the referred portion of Nomura limits its description by recognizing an optical disc device using various types of discs and the necessity of switching an optical system of an optical pickup in order to obtain better signal reproduction characteristics. However, nothing is taught or suggested in Nomura as to detecting an amplitude of the envelope signal by "sampling the envelope signal between a maximum value and a minimum value into n sample signals at a zero cross interval, and obtaining an average value of the obtained n peak-to-peak values," as recited in independent claim 1.

Furthermore, according to Nomura, the levels of the upper and lower envelopes of the readout signal are denoted by RF_p and RF_b, where a subscript "1" is added when the light beam 6 is positioned on the information track 3, while a subscript "2" is added when the light beam 6 is positioned between the information track 3. See column 14, line 63, to column 15, line 40. However, even assuming, arguendo, that the subscript "2" is added when the light beam 6 is positioned between the information track 3 is off-track, clearly the subscript "1" is added only when the light beam 6 is on-track, rather than off-track. Accordingly, Nomura fails to teach or suggest, "a controller detecting an amplitude of the envelope signal at an off-track state of the loaded disc, and discriminates the type of the loaded disc using the detected amplitude, wherein said controller comprises: an envelope amplitude detector detecting the amplitude of the envelope signal and sampling the envelope signal between a maximum value and a minimum value into n sample signals at a zero cross interval, and obtaining an average value of the obtained n peak-to-peak values as the detected amplitude," as recited in independent claim 1. Further, Nomura is silent as to teaching or suggesting "a disc discriminator comparing a level of the detected amplitude with at least one predetermined reference level," emphasis added, as

recited in independent claim 1. Rather, it appears that Nomura considers a polarity of the amplitude indicating signal RFAMP(avg).

Furthermore, according to the Office Action, column 5, lines 17-55 of Nomura teaches or suggests, "a controller which detects an amplitude of the envelope signal at an off-track state of the loaded disc, and discriminates the type of the loaded disc using the detected amplitude," as recited in independent claim 1. However, Applicant respectfully disagrees.

Contrary to the assertions made in the Office Action that in Nomura "TES is tracking error signal that are used to control the position of the light beam to follow a target information track – off-track or on-track," Nomura specifically indicates that the type of disc is discriminated on on-track only. The FES and TES are simply used to control the converged position of the light beam 6 to follow a target information track 3; however, RFAMP is an amplitude indicating signal to be input to a disc type identifying section 11 and is a signal representing a result of subtracting the lower envelope from the upper envelope to identify the type of the optical disc 1. As clearly described in Nomura, the reference identifies the type of the optical disc 1 on the basis of the amplitude indicating signal RFAMP, not based on TES.

Accordingly, it is respectfully asserted that Nomura fails to anticipate all the claimed features of independent claim 1. It is respectfully requested that independent claim 1 and related dependent claims be allowed.

Referring to independent claim 12, this claim recites "obtaining an envelope signal from an RF signal detected from one of discs which is loaded in the optical disc reproducer, at an off-track state of the loaded disc; detecting an amplitude of the envelope signal comprising sampling the envelope signal between a maximum value and a minimum value into a predetermined number of sample signals at a zero cross interval, detecting the predetermined number of sample signals, and obtaining an average value of the detected predetermined number of sample signals to detect the amplitude." The arguments presented above supporting the patentability of independent claim 1 are incorporated herein to support the patentability of independent claim 12 and related dependent claims. Furthermore, Nomura describes comparing the voltage of the comparative voltage source 34 with the difference Vamp between the maximum value and minimum value of the amplitude indicating signal RFAMP obtained by the subtracter 32. However, Nomura fails to teach or suggest, "comparing the amplitude of the envelope signal with at least one predetermined reference level," as recited in independent claim 12. Accordingly, it is respectfully asserted that Nomura fails to teach or suggest all the claimed

features of independent claim 12. It is requested that independent claim 12 and related dependent claims be allowed.

Independent claim 20 recites "a controller which detects an amplitude of the envelope signal **only** when a focusing operation of the disc being performed prior to a tracking control operation of the disc being performed, to discriminate the type of the loaded disc, wherein the controller controls the reproduction of the disc in accordance with the discriminated disc type." As previously argued, according to Nomura, the levels of the upper and lower envelopes of the readout signal are denoted by RF_p and RF_b, where a subscript "1" is added when the light beam 6 is positioned on the information track 3, which is clearly added only when the light beam 6 is on-track, rather than off-track. Thus, Nomura fails to teach or suggest "detects an amplitude of the envelope signal **only** when a focusing operation of the disc being performed prior to a tracking control operation of the disc being performed," emphasis added, as recited in independent claim 20.

In addition, Nomura identifies the type of the optical disc 1 on the basis of an amplitude indicating signal RFAMP, and outputs an identification result signal DTYPE. See column 5, lines 49-56. The subtracter 32 calculates the difference Vamp between the maximum V-peak and minimum V-bottom of the amplitude indicating signal RFAMP by subtracting an output of the lower envelope detector 31 from an output of the upper envelope detector 30. See column 6, lines 57-62. Accordingly, the amplitude indicating signal RFAMP is obtained at all times rather than "only when a focusing operation of the disc being performed prior to a tracking control operation of the disc being performed," as recited in independent claim 20. Accordingly, it is respectfully asserted that Nomura fails to teach or suggest all the claimed features of independent claim 20. It is requested that independent claim 20 and related dependent claims be allowed.

Independent claim 25 recited "detecting an amplitude of the envelope signal only when a focusing operation of the disc is being performed prior to a tracking control operation of the disc being performed, to discriminate the type of the loaded disc, and controlling the reproduction of the disc in accordance with the discriminated disc type." The arguments presented above supporting the patentability of independent claim 12 are incorporated herein to support the patentability of independent claim 25 and related dependent claims. Accordingly, it is respectfully asserted that Nomura fails to teach or suggest all the claimed features of independent claim 25. It is requested that independent claim 25 and related dependent claims

be allowed.

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited. At a minimum, this Amendment should be entered at least for purposes of Appeal as it either clarifies and/or narrows the issues for consideration by the Board.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited and possibly concluded by the Examiner contacting the undersigned attorney for a telephone interview to discuss any such remaining issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Please CANCEL claims 4, 5, 13, and 21 and AMEND claims 1, 6, 8, 11, 12, 14, 15, 16, and 19. The remaining claims are reprinted, as a convenience to the Examiner, as they presently stand before the U.S. Patent and Trademark Office.

1. (ONCE AMENDED) An optical disc discrimination apparatus for use in an optical disc reproducer which reproduces data from a plurality of different types of discs with a single optical pickup, the optical disc discrimination apparatus comprising:

an RF envelope generator [which generates] generating an envelope signal from an RF signal read from one of the discs which is loaded in the optical disc reproducer; and

a controller [which detects] detecting an amplitude of the envelope signal at an off-track state of the loaded disc, and discriminates the type of the loaded disc using the detected amplitude, wherein said controller comprises:

an envelope amplitude detector detecting the amplitude of the envelope signal and sampling the envelope signal between a maximum value and a minimum value into n sample signals at a zero cross interval, and obtaining an average value of the obtained n peak-to-peak values as the detected amplitude, and

a disc discriminator comparing a level of the detected amplitude with at least one predetermined reference level and discriminating whether the loaded disc is a CD, a DVD-ROM, or a DVD-RAM, based on the comparison.

2. (ORIGINAL) The optical disc discrimination apparatus of claim 1, wherein said RF envelope generator generates the envelope signal by a peak hold and a bottom hold of the RF signal read from the loaded disc.

3. (ORIGINAL) The optical disc discrimination apparatus of claim 1, wherein said off-track state is a state where only a focusing is accomplished before a tracking control of the loaded disc is performed.

4. (CANCEL)

5. (CANCEL)

6. (ONCE AMENDED) The optical disc discrimination apparatus of claim [4] 1, wherein said at least one predetermined reference level is set based on conditions that a CD has a track pitch relatively larger than a DVD-ROM, thus having a larger change in the amplitude of the RF signal as an optical beam emitted by the optical disc reproducer traverses tracks thereof, and that a DVD-RAM has no change in the amplitude of the RF signal as the optical beam emitted by the optical disc reproducer traverses the tracks thereof.

7. (ORIGINAL) The optical disc discrimination apparatus of claim 6, wherein said disc discriminator discriminates whether:

the loaded disc is the CD if a level of the detected envelope amplitude is larger than a first one of the at least one predetermined reference level;

the loaded disc is the DVD-ROM if the level of the detected envelope amplitude is smaller than the first predetermined reference level and larger than a second one of the at least one predetermined reference level; and

the loaded disc is the DVD-RAM if the level of the detected envelope amplitude is smaller that the second predetermined reference level.

8. (ONCE AMENDED) The optical disc discrimination apparatus of claim [5] 1, wherein said envelope amplitude detector detects a magnitude of peak-to-peak values of the n sample signals, and obtains the average value of the peak-to-peak values to determine the detected amplitude.

9. (ORIGINAL) The optical disc discrimination apparatus of claim 8, wherein said envelope amplitude detector obtains the average value, represented by $ENV_{p\text{-}p}$, in accordance with the equation:

$$ENV_{p-p} = \frac{\sum [ENV_{\max} - ENV_{\min}]}{n} \qquad \text{....(1)}$$

wherein n is the predetermined number of samples, ENV_{max} is the maximum value and ENV_{min} the minimum value.

10. (ORIGINAL) The optical disc discrimination apparatus of claim 3, wherein said controller controls rotation of the loaded disc at a speed slow enough to maintain a focusing

state with respect to each of the plurality of different types of discs in the off-track state.

11. (ONCE AMENDED) The optical disc discrimination apparatus of claim [4] 1, wherein said controller controls rotation of the loaded disc at a speed slow enough to maintain a focusing state with respect to each of the CD, DVD-ROM and DVD-RAM in the off-track state.

12. (ONCE AMENDED) An optical disc discrimination method of discriminating a type of a disc for use in an optical disc reproducer which reproduces data from a plurality of discs with only a single optical pickup, the optical disc discrimination method comprising:

[(a)] obtaining an envelope signal from an RF signal detected from one of discs which is loaded in the optical disc reproducer, at an off-track state of the loaded disc;

[(b)] detecting an amplitude of the envelope signal comprising

sampling the envelope signal between a maximum value and a minimum value into a predetermined number of sample signals at a zero cross interval,

detecting the predetermined number of sample signals, and

obtaining an average value of the detected predetermined number of sample signals to detect the amplitude;

[(c)] comparing the amplitude of the envelope signal with at least one predetermined reference level; and

[(d)] discriminating whether the loaded disc is a CD, a DVD-ROM, or a DVD-RAM based on the comparison.

13. (CANCEL)

14. (ONCE AMENDED) The optical disc discrimination method of claim 12, [wherein said step (d) comprises] wherein said discriminating of the loaded disc as the CD, the DVD-ROM or the DVD-RAM, is based upon a condition that a change in the RF signal amplitudes as an optical beam of the optical disc reproducer moves across tracks thereof differs from each other in the CD, the DVD-ROM, and the DVD-RAM, wherein,

a first one of the at least one predetermined reference level is larger than the amplitude of the RF signal detected from the CD, and

a second one of the at least one predetermined reference level is smaller than the first predetermined reference level and larger than the amplitude of the RF signal detected from the

DVD-ROM.

15. (ONCE AMENDED) The optical disc discrimination method of claim 14, wherein said [step (d)] discriminating comprises:

discriminating that the loaded disc is the CD if the amplitude of the envelope signal detected from the RF signal is larger than the first predetermined reference level;

discriminating that the loaded disc is the DVD-ROM if the amplitude of the envelope signal detected from the RF signal is smaller than the first predetermined reference level and larger than the second predetermined reference level; and

discriminating that the loaded disc is the DVD-RAM if the amplitude of the envelope signal detected from the RF signal is smaller that the second predetermined reference level.

16. (ONCE AMENDED) The optical disc discrimination method of claim [13] 12, wherein:

the detecting of the predetermined number of sample signals comprises detecting a magnitude of peak-to-peak values of the predetermined number of samples; and

the obtaining of the average value comprises obtaining the average value of the peak-to-peak values to detect the amplitude of the envelope signal.

17. (ORIGINAL) The optical disc discrimination method of claim 16, wherein the obtaining of the average value, represented by $ENV_{p\text{-}p}$, is determined in accordance with the equation:

$$ENV_{p-p} = \frac{\sum [ENV_{\max} - ENV_{\min}]}{n} \qquad \text{....(1)}$$

wherein n is the predetermined number of samples, ENV_{max} is the maximum value and ENV_{min} is the minimum value.

18. (ORIGINAL) The optical disc discrimination method of claim 12, further comprising:

controlling a rotation of the loaded disc at a speed slow enough to maintain a focusing state with respect to each of the plurality of different types of discs in the off-track state.

19. (ONCE AMENDED) The optical disc discrimination method of claim [13] 12, further comprising:

controlling a rotation of the loaded disc at a speed slow enough to maintain a focusing state with respect to each of the CD, DVD-ROM and DVD-RAM in the off-track state.

20. (AS ONCE AMENDED) An optical reproducer which reproduces data from a plurality of different types of discs using a single optical pickup, the optical disc discrimination apparatus comprising:

a data reproducing device which reproduces the data by illuminating an optical beam on a loaded one of the optical discs, receive the reflected optical beam, to generate an RF signal;

an RF envelope generator which generates an envelope signal from the RF signal; and

a controller which detects an amplitude of the envelope signal only when a focusing operation of the disc is being performed prior to a tracking control operation of the disc being performed, to discriminate the type of the loaded disc, wherein the controller controls the reproduction of the disc in accordance with the discriminated disc type.

21. (CANCEL)

22. (ORIGINAL) The optical reproducer of claim 20, wherein said controller controls rotation of the loaded disc at a speed slow enough to maintain a focusing state with respect to each of the plurality of different types of discs during the focusing operation.

23. (ORIGINAL) The optical reproducer of claim 20, wherein the optical beam is initialized to 635-650 nm during the focusing operation of the disc performed prior to the tracking control operation of the disc.

24. (ORIGINAL) The optical reproducer of claim 20, further comprising:

an RF amplifier to amplify the RF signal output from the data reproducing device;

a focusing servo to output a focus control signal in accordance with a focus error signal of the RF signal and the discriminated disc type;

a pickup actuator to drive the data reproducing device for focusing based upon the focus control signal;

a spindle motor to rotate the loaded disc in accordance with a servo control signal; and

a spindle servo to generate the servo control signal in accordance with the discriminated disc type and the amplified RF signal.

25. (AS ONCE AMENDED) An optical disc reproduction method of reproducing data from a plurality of different types of discs using a single optical pickup, the optical disc reproduction method comprising:

reproducing the data by illuminating an optical beam on a loaded one of the optical discs, receive the reflected optical beam, to generate an RF signal;

generating an envelope signal from the RF signal; and

detecting an amplitude of the envelope signal only when a focusing operation of the disc is being performed prior to a tracking control operation of the disc being performed, to discriminate the type of the loaded disc, and controlling the reproduction of the disc in accordance with the discriminated disc type.

26. (ORIGINAL) The optical disc reproduction method of claim 25, wherein the discriminating of the type of disc comprises comparing a level of the detected amplitude with at least one predetermined reference level and discriminating whether the loaded disc is a CD, A DVD-ROM, or a DVD-RAM, based upon the comparison.

27. (ORIGINAL) The optical disc reproduction method of claim 25, further comprising controlling rotation of the loaded disc at a speed slow enough to maintain a focusing state with respect to each of the plurality of different types of discs during the focusing operation.

28. (ORIGINAL) The optical disc reproduction method of claim 25, further comprising initializing the optical beam to 635-650 nm during the focusing operation of the disc performed prior to the tracking control operation of the disc.